THE RECOVERY KERNEL

How to Navigate the Recovery Kernel

For People Recovering from Fentanyl

Fentanyl and its analogs, counterfeit pills, and street drugs contaminated with fentanyl. A step-by-step route: what to read, in what order, and what outcome the Kernel projects if you follow it. It builds on the general opioid guide.

> **HARM REDUCTION RESOURCE — NOT MEDICAL ADVICE. FENTANYL OVERDOSE KILLS IN MINUTES.** If someone is unresponsive, cannot be woken, is breathing very slowly or not at all, has pinpoint pupils, or has blue or gray lips: **call 911 first, then give naloxone, put them on their side, and stay with them.** Fentanyl often needs more than one dose of naloxone: give the next dose after 2 to 3 minutes if there is no response, into the other nostril or a new injection site, and keep going until they breathe or help arrives. A chest that goes rigid can stop breathing even after some response and needs a hospital.
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> **Xylazine ("tranq") is not reversed by naloxone.** If someone stays deeply sedated after naloxone, keep giving it (it still treats the fentanyl), call 911, and breathe for them if trained. Never leave a revived person alone: naloxone wears off in 30 to 90 minutes while fentanyl remains, and they can stop breathing again. Stay at least 90 minutes and let emergency services see them anyway.
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> Crisis: call or text 988 · SAMHSA: 1-800-662-4357 · National Drug Helpline: 1-844-289-0879 (24/7)

1. Before you start

This is a route through the Recovery Kernel for people who use fentanyl and want to stop, for people who use any street drug and need to understand their exposure, and for people who are not ready to stop and want to survive until they are. The Kernel holds harm reduction as a legitimate position. Its frame: fentanyl is a laboratory opioid 50 to 100 times as potent as morphine, and the deaths reflect a different supply landscape, often with people not knowing what they had, not weaker people. It also says medication for opioid use disorder is not "just switching drugs": it is evidence-based medicine that saves lives. Six rules follow.

- **Naloxone before anything.** Carry it, know how to use it, and make sure the people around you do too. It is available without a prescription at most US pharmacies.
- **MAT is the foundation.** The Kernel says buprenorphine and methadone reduce opioid overdose mortality by 50 to 70 percent, and that the rest of the guide is built on top of medication, not instead of it.
- **There is no reliable dose.** Fentanyl is unevenly mixed, so one part of a pill or bag can hold many times what the next part does. "I have used this amount from this source before" is not safety information.
- **Tolerance disappears fast.** After even 3 to 4 days without opioids it drops significantly, and the most dangerous period is the two weeks after release from jail, a hospital stay, or detox.

- **Nothing unverified is safe.** Counterfeit pills that look identical to prescription pills may hold only fentanyl, and fentanyl now contaminates cocaine, meth, MDMA, and heroin.
- **Do not wait for test results to start.** MAT and safety come first, and the genome refines the plan (Main Book, Quick-Start Step 3; Supp. Ch. 5, Step 1b).

How chapters are cited. "Main Book" is the Recovery Kernel Main Book (Second Edition, Centurian). "Compendium" is the Complete Protocol Compendium. "Supp. Ch. N" is chapter N of the Supplemental Book. The core chapter is Chapter 19 (How to Recover from Fentanyl). Chapters 18 (Opioids) and 35 (Discontinuance Protocol: Opioids) are the general opioid framework it builds on, and are covered in the companion opioid guide. Section numbers (§) refer to sections inside those chapters.

> **If you are not ready to stop yet.** The Kernel's survival rules: carry naloxone and make sure someone nearby can respond; never use alone; test with fentanyl strips (they detect fentanyl but cannot rule out analogs, so a negative is not a guarantee); take nothing that did not come from a licensed pharmacy with a prescription; and after any break in use, or a change in supply, assume your tolerance is gone and use far less than before. Get MAT started even if you are not ready to stop: it is what keeps people alive. Harm reduction groups (NEXT Distro, local exchanges) distribute naloxone and test strips, and SAMHSA at 1-800-662-4357 can direct you.
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> **A note on protocol numbers.** Supplemental Chapter 19 cites Compendium protocols by number, and some numbers do not match the Compendium as printed. It calls Protocol 05 "environmental redesign" (printed: Digital Detox), Protocol 03 "exercise" (printed: Sonic Architecture; exercise is Protocol 19), Protocol 22 a community protocol (printed: The Family Field), Protocol 01 the source of the emotional-pain response (printed: Emergency Triage), and Protocol 20 the identity protocol (printed: Mapping the Terrain). It also sends genomic mapping to "Section 15 (Compendium)". This guide cites each protocol by its printed title. If a number and a title disagree, follow the title.
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> For fentanyl and any unverified supply, a hit that “didn’t do much” is not reliable information — redosing to compensate for what you assume is a weak batch is one of the most common causes of overdose.
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> Redosing is not the only version of this. Watching peers in a treatment setting negotiate a relapse, getting confident advice from someone untrained in your specific situation, or noticing a prescriber treat a prescribed substance more casually than an illicit one can all trigger the same pattern: a felt doubt read as “the plan must be wrong,” answered by abandoning it. See **The Commandeering Map**, a companion to this series, for the fuller pattern, including how it can differ by genetic profile and what helps when practice-based resistance alone is not enough.

2. The route at a glance

Steps 0 and 1 come first and cannot be skipped. Steps 2 to 4 can run at the same time. Steps 5 to 9 overlap and are the work of the first two years. Step 10 is everything after. "P" means Compendium Protocol; "C" means Centurian Paper.

Step	When	What you do	Turn to
0	Day 0	Survive: naloxone in hand, overdose response known, xylazine and counterfeit-pill rules, tolerance rules.	Supp. Ch. 19 §0 Supp. Ch. 19 §1.3–1.4 Main Book, Quick-Start Step 1
1	Days 0–7	Start MAT. Careful induction. Withdrawal comfort medications.	Supp. Ch. 19 §3, §4.4 Supp. Ch. 18 §3; Ch. 35 §§7–8 Supp. Ch. 38
2	Weeks 1–4	Read the Main Book in order.	Main Book: Who This Book Is For, Quick-Start, Part One (Ch. 1–5) Supp. Ch. 2, 3
3	Weeks 1–4	Order 30× whole-genome sequencing. Add a clinical PGx panel and baseline labs.	Supp. Ch. 5 Step 1 Supp. Ch. 19 §2 Compendium P06
4	Weeks 2–6	Resolve your profile. Check for alcohol or benzodiazepine co-use.	Supp. Ch. 5 Steps 2–3, 6 Supp. Ch. 19 §2
5	Day 1 to Month 6	Build the foundation alongside MAT: endorphin support, methylation, sleep.	Supp. Ch. 19 §4 Supp. Ch. 5 Phase One Compendium P07, P09, P17, P18
6	Weeks 1–12, then ongoing	The craving, and the highest-risk windows: PAWS, release, discharge, cues.	Supp. Ch. 19 §5, §1.3 Compendium P05, P08, P20, P21
7	Week 1, then ongoing	Pain plan. Test and treat hepatitis C and HIV. Wound and heart checks.	Supp. Ch. 19 §4.3, §4.6 Compendium P14
8	Months 1–24	Build the natural endorphin architecture.	Supp. Ch. 19 §6 Supp. Ch. 36; Ch. 3 C-28; Compendium P19, P29
9	Months 2–12+	Identity, inventory, work, family, and the legal aftermath.	Supp. Ch. 42, 43, 39, 51 Supp. Ch. 19 §8 Compendium P24, P22
10	Year 1 to Year 10	Steward: review, transplant, peer recovery. Keep the lapse plan.	Supp. Ch. 44, 6, 38 Compendium P02, P13 Supp. Ch. 5 Step 6

3. The route, step by step

Step 0 — Survive (Day 0, before everything)

Fentanyl reaches the brain faster than heroin, oxycodone, or morphine, so people can go from alert to unresponsive in under two minutes. Know the signs: unresponsive, breathing slower than one breath every 5 seconds, pinpoint pupils, blue or gray lips (a late sign), gurgling or snoring breath, and a rigid chest wall. The Kernel's response: call 911 first, spend no more than about 15 seconds trying to rouse them, roll them onto their side, give naloxone (nasal spray or injectable), breathe for them if you are trained, watch for 2 to 3 minutes, and give more naloxone if there is no response, even sooner for fentanyl, for up to four or more doses. Never leave them. The Kernel notes an 8 mg nasal formulation exists for the fentanyl era, and that Good Samaritan laws in most US states protect people who call 911 and give naloxone, so check your state.

Three more things to know. Xylazine adds sedation naloxone cannot reverse and can cause deep, non-healing skin wounds, sometimes far from any injection site. Counterfeit pills that look identical to prescription oxycodone, Adderall, Xanax, or Percocet may contain only fentanyl, and the DEA has reported that a majority of counterfeit oxycodone-lookalike pills contain a potentially lethal amount, so treat every unverified pill as a fentanyl dose. And fentanyl contamination now extends to heroin, cocaine, meth, and MDMA, where an opioid-naive person has no protection at all.

Turn to: Supp. Ch. 19 §0 (recognizing overdose; the naloxone protocol; xylazine; the counterfeit pill crisis; where to get naloxone) and §1.3–1.4 (the hotspot problem; the contamination landscape). Main Book, Quick-Start Boot Sequence, Step 1. Compendium Protocol 01, Emergency Triage, for an acute crisis state.

Step 1 — Start MAT (Days 0–7)

The Kernel says MAT should be established before or alongside any other recovery work. Three options. Buprenorphine is first-line and can now be prescribed by any DEA-registered provider (the special waiver was removed in 2023), including primary care, emergency departments, telehealth services, and low-threshold clinics that start it the same day. Because fentanyl binds tightly, buprenorphine started too soon after the last use can precipitate severe withdrawal, so ask your prescriber about a low-dose (microdosing) induction. Methadone, dispensed only at licensed opioid treatment programs, is the most evidence-based option for severe use, often needs higher doses for fentanyl dependence, and requires an ECG. Extended-release naltrexone works after complete detox (typically 7 to 10 days opioid-free, a high overdose-risk stretch) and responds best in OPRM1 G carriers. The Kernel says the evidence supports extended, often indefinite treatment, driven by clinical stability and not an arbitrary timeline, and that stopping prematurely sharply raises relapse and overdose death risk.

For withdrawal comfort, the Kernel lists clonidine (autonomic symptoms), loperamide (at recommended doses only, since very high doses have been misused), NSAIDs and acetaminophen, magnesium, and hydroxyzine. If you also use alcohol or benzodiazepines, combined withdrawal is medically dangerous, and you need a medical assessment before trying to stop anything.

Turn to: Supp. Ch. 19 §3 (MAT: the three options; fentanyl-specific considerations; how to access it) and §4.4 (withdrawal and PAWS management). Supp. Ch. 18 §3 and Supp. Ch. 35 §§7–8. Supp. Ch. 38 (questions to ask about MAT duration). SAMHSA: findtreatment.gov or 1-800-662-4357.

Step 2 — Read the Main Book (Weeks 1–4)

Read it in order once you are stable. If you are overwhelmed, the Quick-Start Boot Sequence is designed to be read on its own. Read "Who This Book Is — and Is Not — For" first: it names situations where the supplement protocols need medical modification, including active psychosis, pregnancy, and severe liver disease.

Read in this order: Who This Book Is For → Quick-Start Boot Sequence → Part One: Ch. 1 (Why Willpower Isn't Enough), Ch. 2 (MTHFR), Ch. 3 (COMT), Ch. 4 (CYP450, the chapter on drug metabolism), Ch. 5 (When Systems Collide) → Ch. 7 (Harm Reduction), only if you are still using → Part Two, the case files (Chapter 6), especially the Philip Seymour Hoffman file, which is the tolerance-reset lesson. Ch. 8 (Oxytocin Protocol) is experimental and specialist-only. Appendix A (which includes the interaction matrix) and Appendix B are reference.

Then add: Supp. Ch. 2 (Clarity · Restoration · Manning), which includes Case 03, the heroin and fentanyl case, and Case 08, the prescription-to-street pipeline. Supp. Ch. 3 (The Addict Virgin Problem) recalibrates timelines for a damaged system. Supp. Ch. 1 (Why They Left You There) is optional reading for the shame.

Step 3 — Get your DNA (Weeks 1–4)

The Kernel's recommended route is 30× whole-genome sequencing, which returns a VCF file, a one-time asset you keep. A consumer SNP array is an acceptable start. A clinical pharmacogenomic panel adds clinical-grade CYP calls. Homocysteine, B12, and RBC folate are functional markers you can recheck quarterly.

For fentanyl the Kernel names **OPRM1** (the primary opioid gene, and the predictor of naltrexone response), **CYP3A4** (the most critical pharmacokinetic gene: it clears fentanyl, and many HIV drugs, antifungals, and antibiotics block it and can dramatically prolong and intensify fentanyl), **CYP2D6** (a secondary fentanyl pathway, but decisive for codeine, tramadol, and hydrocodone), **COMT**, **MTHFR**, **SLC6A4**, and **GABRA2** if you also used alcohol or benzodiazepines. Until results arrive: did opioids need higher doses than for peers; did you use mainly for pain; did other medications change how fentanyl felt; do you also use alcohol or benzodiazepines; was anxiety or emotional pain the main driver?

> **Confirm what you are ordering.** Supp. Ch. 5 specifies 30× whole-genome sequencing with VCF output. "WGBS" more commonly names whole-genome bisulfite sequencing, a DNA-methylation assay that is not built to call variants such as MTHFR C677T. Ask the lab for a standard variant file (VCF).

Turn to: Supp. Ch. 5, Step 1. Supp. Ch. 19 §2 (the DNA testing panel for fentanyl recovery; phenotyping without testing). Compendium Protocol 06, Phenotype Assessment. Main Book Ch. 2 and Ch. 3 self-assessments.

Step 4 — Resolve your profile (Weeks 2–6)

Write your profile down and carry key results on a card, including your CYP2D6 status, which the Compendium says can make a future prescription either useless or fatal.

If your result is...	What changes	Source
OPRM1 A118G (G carrier)	Needed more drug for the same effect, and natural rewards may feel less satisfying at first because the receptor binds endorphins less well. Naltrexone response is strongest. Raise with your prescriber.	Supp. Ch. 19 §2, §3.1
CYP3A4 inhibitors or inducers	Inhibitors (fluconazole, erythromycin, grapefruit, many HIV drugs) prolong and intensify fentanyl and raise buprenorphine levels. Inducers (rifampin, carbamazepine, St. John's wort) can precipitate withdrawal. Disclose everything you take.	Supp. Ch. 19 §2, §3.2
CYP2D6 poor or ultrarapid	Ultrarapid: codeine converts to morphine dangerously fast. Poor: codeine and tramadol do nothing. Know your status before any future opioid prescription.	Supp. Ch. 19 §2
COMT Met/Met	Lower pain threshold and more pain sensitivity, so more likely to have used opioids for genuine pain. Pain and anxiety are primary recovery targets.	Supp. Ch. 19 §2
MTHFR variants	Lower endorphin precursor synthesis. 5-MTHF often improves pain sensitivity and emotional regulation. Avoid synthetic folic acid with any T variant.	Supp. Ch. 19 §2, §4.1; Main Book Ch. 2
SLC6A4 short/short	High anxiety sensitivity and less emotional-pain buffering, so fentanyl may have been anxiety treatment. Treat the anxiety directly.	Supp. Ch. 19 §2
GABRA2 high-risk (with alcohol or benzodiazepine use)	Combined opioid and GABAergic withdrawal is clinically dangerous. Medical assessment before any attempt to stop.	Supp. Ch. 19 §2

Turn to: Supp. Ch. 5, Steps 2, 3, and 6 (gene systems, combined profiles, profile template). Supp. Ch. 19 §2. Supp. Ch. 35 §5. Main Book Ch. 5 and Appendix A.

Step 5 — Build the foundation alongside MAT (Day 1 to Month 6)

The Kernel says MAT stabilizes the opioid system at a functional level but does not rebuild it, so the supplement and behavioral protocol runs on top of it, not instead of it. Its layers: methylation support (5-MTHF, methylcobalamin, active B6, magnesium); endorphin support, led by DLPA (which slows the breakdown of your own enkephalins), NAC (for the glutamate side of craving), omega-3, and vitamin D with K2; secondary dopamine and serotonin support, with 5-HTP not combined with MAT opioids or tramadol without a physician; and sleep repair, noting that MAT itself often improves sleep. The dose tables are in the chapter below. Run every addition past a pharmacist and an interaction checker (Drugs.com or Medscape) and tell your MAT prescriber about everything, because of CYP3A4. The peptide layer in Supp. Ch. 19 §4.7 is not a self-start step.

Turn to: Supp. Ch. 19 §4.1 (methylation), §4.2 (endorphin system reconstruction), §4.5 (sleep), §4.7 (peptides, physician only). Supp. Ch. 5, Phase One. Main Book Ch. 2, §2.4–2.5. Compendium Protocol 07 (Neuroplasticity), Protocol 09 (The Gut-Brain Axis), Protocol 17 (The Nightly Restoration), Protocol 18 (Eating for Restoration), and Centurian Paper C-32 (The Insomnia Architecture).

Step 6 — The craving and the highest-risk windows (Weeks 1–12, then ongoing)

The Kernel calls this the most lethal craving in the series, not because it is stronger, but because following it after even a short abstinence frequently kills. Five triggers. Pain, physical or emotional: use the pain plan, not willpower. The "flu" feeling of PAWS, which mimics early withdrawal: name it ("this is a PAWS episode, not withdrawal; I have not used"), take your supports, and remember that dosing after abstinence is what is lethal. Release from jail, a hospital stay, or detox: the highest-risk window, the two weeks after release, when tolerance is lowest and cravings and supply are both back. Have naloxone in hand, MAT arranged before you leave if at all possible, housing and a support contact confirmed, and a written plan for the first 72 hours. Environmental cues: the geography, the people, and the phone contacts tied to use, which the Kernel says need real changes, including deleting dealer numbers and apps. And emotional pain: loss, rejection, shame, loneliness.

The Kernel's 5-minute interrupt: call or text your support, MAT prescriber, or 988 first, before any other step; eight cycles of 4-7-8 breathing; your supplements; name the trigger; leave the environment; do your highest-intensity natural endorphin activity; and document trigger, type, intensity, action, and outcome.

Turn to: Supp. Ch. 19 §5 (the fentanyl craving; the trigger map; the interrupt) and §1.3 (the hotspot problem: the tolerance rules). Compendium Protocol 05 (Digital Detox), Protocol 08 (Social Environment), Protocol 20 (Mapping the Terrain), Protocol 21 (Reading the Collapse).

Step 7 — Pain, infections, and the body (Week 1, then ongoing)

The pain was real, and the Kernel says recovery needs a pain plan without opioids, made with a physician who knows both addiction medicine and pain. Buprenorphine itself has analgesic effect and can address pain and dependence together. Low-dose naltrexone works only in fully opioid-free recovery (not with buprenorphine). NSAIDs and acetaminophen help with liver monitoring. Physical therapy and exercise are the most evidence-based non-drug tools. Gabapentin, pregabalin, and duloxetine are options with their own misuse risks. Nerve blocks and other procedures fit some conditions. Test and treat infections in the first week: hepatitis C (curable in 8 to 12 weeks with a cure rate above 95 percent, and the Kernel says not to wait for "more stable recovery"), HIV (with full disclosure of your substances, since many HIV drugs block CYP3A4), hepatitis B vaccination, and prompt cardiac evaluation for fever, a new murmur, or unexplained fatigue after injecting (endocarditis). Any wound that will not heal, particularly with xylazine, needs medical care, not a home kit.

Turn to: Supp. Ch. 19 §4.3 (pain management in recovery) and §4.6 (hepatitis C and HIV assessment; wound care). Compendium Protocol 14 (Pain Management).

Step 8 — Build the natural endorphin architecture (Months 1–24)

Fentanyl gave a pain buffer so complete that the world softened and the self quieted. The Kernel says the endorphin system can provide these things, less immediately and with effort, but sustainably, and that everything here applies whether or not you are on MAT. Its sources: sustained vigorous exercise (the primary activator, which acts on the same receptors, and which it says to begin in week 1 even briefly); genuine human connection and safe touch, which the Kernel ties to OPRM1 and social bonding; shared laughter; cold exposure; music with emotional depth, including sad music that validates grief; service, especially to others with opioid use disorder, which it calls the most sustained source in long-term recovery; and contemplative community. It says the grief work (the relationships, time, and health opioid use cost) is real and needs genuine mourning.

Turn to: Supp. Ch. 19 §6 (the natural endorphin architecture). Supp. Ch. 36 (Roots and Reversal). Supp. Ch. 3 (timeline recalibration). Centurian Paper C-28 (The Recast). Compendium Protocol 19 (The Body in Motion), Protocol 03 (Sonic Architecture), Protocol 29 (The Peacetime Paradox).

Step 9 — Identity, the legal aftermath, and rebuilding a life (Months 2–12+)

Fentanyl use disorder disproportionately intersects with the criminal justice system, and the Kernel points to drug court, MAT in correctional settings, and reentry planning with MAT continuation. It notes that MAT is covered by Medicaid in all states and by Medicare Part D, that coverage denials can be appealed, and that buprenorphine can be prescribed by any DEA-registered provider, so ask your primary care doctor or emergency department. Full Inventory is a structured 180-day plan, and Amends to Self puts the person who lived through it first. Family, money, and work follow. The Kernel also lists peer supports: SMART Recovery, Narcotics Anonymous, the National Alliance of Advocates for Buprenorphine Treatment, and the National Drug Helpline.

Turn to: Supp. Ch. 19 §8 (the regulatory and policy context; clinical guidelines and resources). Supp. Ch. 42 (Full Inventory). Supp. Ch. 43 (Amends to Self). Supp. Ch. 39 (Complex Trauma and the Substance Connection). Compendium Protocol 24 (Returning to Work), Protocol 22 (The Family Field), Protocol 16 (The Isolation Spiral), Protocol 25 (The Open Door). Supp. Ch. 51 (Family & Support Network Guide): give it to the people who love you.

Step 10 — The long game (Year 1 to Year 10)

The Kernel maps the first two years in detail. After that, navigation shifts from repair to stewardship. Section 4 shows how. Standing tools: Supp. Ch. 44 (The Transplant: redirect the devotion and daily structure the pattern required into a practice that grows). Supp. Ch. 6 (Stay Non-Addicted) and Compendium Protocol 02 (Behavioral Addictions, with its "Mask Change" caution on addiction transfer). Compendium Protocol 13 (The Pharma Trap, a regular review of whether each medication is still needed). Supp. Ch. 38. Supp. Ch. 5, Step 6 (a weekly AI check-in profile, a reasoning tool and never a provider). The Kernel's picture of the long game: the person who carries naloxone into harm-reduction spaces and sits with someone in the worst moment saying "I have been where you are" is doing some of the most important work in the epidemic.

4. How navigation changes at Years 3, 5, and 10

Shading shows how much attention each track needs. Darkest is primary focus, then active, then maintenance. White cells with gray text are standing safeguards: low effort, never dropped. Numbers in brackets refer to the shifts listed below the table.

Track	Months 0–24 (foundation)	Year 3 (consolidate)	Year 5 (build out)	Year 10 (steward)
Safety and naloxone	Naloxone, strips; never use alone	Naloxone kept; others trained	Naloxone kept; outreach carries it	Lapse plan: naloxone, MAT call [6]
MAT and medical	MAT first; HCV, HIV checks	MAT review: readiness first [1]	Stable regimen or planned taper	Annual review; MAT if needed
Biology and genome	OPRM1, CYP3A4; 5-MTHF base	Retest labs; step stack to upkeep [2]	Prescriber card: CYP2D6, CYP3A4	Re-check with new meds and age
Cues and supply	Dealer contacts and cues cut	PAWS episodes named, rare	Triggers shift: pain, loss [4]	Same plan, rehearsed
Endorphin and reward	Exercise, touch, laughter, cold	Natural reward carries the load [3]	Exercise is a lifestyle	Periodized, still daily
Pain, mood, trauma	Pain plan first; trauma later	Trauma work, if stabilized	Pain plan, annual review	New pain: age, surgery, dental [7]
Identity and Manning	Survive first; purpose seeds	Transplant; return to work	Manning: peer recovery work [5]	Mentor or run a group

The seven shifts

1. **Year 3, MAT becomes a review, not autopilot.** The Kernel says duration should be driven by clinical stability, not an arbitrary timeline, and that stopping prematurely sharply raises overdose risk (Supp. Ch. 19 §3.2). Bring the duration and readiness questions in Supp. Ch. 38 to your prescriber, and use Compendium Protocol 13 for any other medication. Leaving MAT is a supervised decision, not a date.
2. **Year 3, the stack moves from building to upkeep.** Retest labs (Supp. Ch. 5 Step 1a) and step down toward maintenance. The Trinity chapter says supplements are taken until stable, then tapered and resumed if the system destabilizes; Main Book Ch. 2 treats MTHFR support as maintenance, not cure. Step down to maintenance, not to zero.
3. **Year 3, natural reward carries the load.** The Kernel describes the endorphin architecture as built through consistent daily practice, converging over months into an endorphin system that operates without pharmacological support (Supp. Ch. 19 §7). By year 3, exercise, connection, and service are ordinary life, and PAWS episodes, which the Kernel puts at 6 to 18 months, are behind you.
4. **Year 5, triggers shift to pain and loss.** As cue-driven craving fades, the Kernel's named triggers remain: physical or emotional pain, loss, rejection, and

loneliness (Supp. Ch. 19 §5). Keep the pain plan current and the support contacts reachable. This shift is partly sourced and partly extrapolation.

5. **Year 5, Manning.** This is the Trinity's third stage (Supp. Ch. 2). The Kernel says peer recovery support for others with fentanyl use disorder is the most powerful element of the long game, and describes the naloxone carrier and the peer as the most important work in the epidemic (Supp. Ch. 19 §6, §7).
6. **Year 10, the lapse plan stays for life.** The Kernel says relapse after abstinence frequently kills, because tolerance drops within days and the supply is unpredictable, and that the Hoffman case is its own argument that risk never reaches zero (Supp. Ch. 19 §5; Main Book Part Two). Keep naloxone at home, a written plan, and a MAT prescriber you can call the same day.
7. **Year 10, new pain.** Age brings surgeries, dental work, and new pain, and the Kernel treats pain as a primary driver and trigger (Supp. Ch. 19 §4.3, §5). Make the plan before the event, and give every prescriber your history and CYP2D6 status. This shift is extrapolation.

What is sourced and what is extrapolated. *Shifts 1, 3, 5, and 6 rest directly on Kernel text. Shift 2 applies Kernel rules at a timing chosen for this guide. Shifts 4 and 7 are extrapolations, with 4 partly sourced. The Kernel's detailed fentanyl timeline ends at about two years, so years 3, 5, and 10 are projections.*

5. What outcome to expect

The short version

If you do the route above, with naloxone and the overdose rules first, MAT started with careful induction, genome-guided medication choices, the foundation built alongside MAT, the highest-risk windows planned for, pain and infections treated, and the natural endorphin architecture built, this is the outcome the Kernel projects:

- **You survive the early window.** MAT stabilizes you, withdrawal is managed, naloxone is always within reach, and you are protected in the two weeks after any supervised setting.
- **MAT keeps you alive while you rebuild.** The Kernel says it reduces overdose mortality by 50 to 70 percent, and that people on it stay in treatment, reconnect with family, return to work, and survive.
- **Over months 6 to 18 the endorphin system recovers,** PAWS thins out (the Kernel puts it at 6 to 18 months, with episodic dysphoria, anxiety, insomnia, and craving), and the natural architecture increasingly carries the load.
- **By years 3 to 5 the work is maintenance and building. By year 10 you are a steward,** carrying a small set of standing safeguards.

The Kernel does not promise zero risk. It states that relapse after abstinence frequently kills, that the supply is not standardized, and that people who lose access to MAT die at dramatically higher rates.

Milestones, in order

Milestone	When	Expected outcome	Source	Basis
Survive the early window	Days 0–7	Naloxone in hand. MAT started, with careful induction. Withdrawal comfort medications. No use alone.	Supp. Ch. 19 §§0, 3, 4.4	Clinical fact
Highest-risk window	First 2 weeks after release, discharge, or detox	Tolerance lowest, cravings and supply both back. Naloxone, MAT bridge, and a 72-hour plan in place before leaving.	Supp. Ch. 19 §§1.3, 5	Clinical fact
Medical baseline	Week 1	HCV and HIV testing, with treatment started. Pain plan made. Wound and heart assessment if injecting.	Supp. Ch. 19 §§4.3, 4.6, 7	Kernel projection
Foundation building	Days 1–14	DLPA, NAC, 5-MTHF, and magnesium begin, alongside MAT. Exercise starts, even briefly.	Supp. Ch. 19 §7	Kernel projection
PAWS window	Months 6–18	Episodic dysphoria, anxiety, insomnia, and craving. Document each episode. Not relapse.	Supp. Ch. 19 §4.4	Kernel projection
Endorphin architecture	Months 1–12	Daily exercise, community, laughter, and service become structural and start to operate without pharmacological support.	Supp. Ch. 19 §§6, 7	Kernel projection
Deep-root reversal	2–5+ years	Prefrontal recovery and epigenetic reversal continue. Some changes may be partial.	Supp. Ch. 36	Kernel projection
Steward phase	Years 3–10	Repair tracks at maintenance. MAT reviewed. Peer work. Standing safeguards, including the lapse plan.	Section 4 of this guide	Extrapolated

The Kernel's own 12-month numbers for one opioid profile

Supplemental Chapter 2 gives projected outcomes at 12 months for an adherent protocol compared with standard treatment. Case 03 is the nearest fentanyl profile: a 29-year-old whose pain began after back surgery, a CYP2D6 poor metabolizer who moved from prescription opioids to street supply and is now using fentanyl. Chapter 19 does not give its own projections.

Case	Measure	Kernel protocol	Standard treatment
Case 03	12-month MAT retention with OPRM1-guided medication selection	74%	40%
Case 03	No overdose events at 12 months, with naloxone access	82%	55%
Case 03	Return to functional daily activities	71%	35%
Case 03	Craving reduction of 50% or more with NAC and DLPA support	65%	15%

How to read these numbers. *The Kernel describes them as archetype projections, "probability estimates" for an adherent, biologically confirmed 12-month protocol, drawn from cited studies and SAMHSA baselines. They are not guarantees, and the Main Book states that it is not reporting a randomized controlled trial of the Kernel itself. The Case 03 protocol centers on MAT with a supplement layer, so the result is not supplements alone.*

What changes the outcome

- **Using alone, or using any unverified pill or powder.** There is no safe counterfeit pill and no reliable dose.
- **Going without MAT,** or stopping it early. The Kernel says this dramatically raises death rates.
- **Release, discharge, or detox without a MAT bridge and naloxone,** the two-week window.
- **Using after a break as if nothing has changed.** Tolerance falls within days.
- **Assuming naloxone is enough.** Fentanyl may need several doses, and xylazine is not reversed.
- **Drug interactions,** especially CYP3A4 inhibitors (many HIV drugs, antifungals, antibiotics, grapefruit) with fentanyl or buprenorphine.
- **Combined withdrawal** from opioids with alcohol or benzodiazepines, without medical care.
- **Untreated pain, or untreated hepatitis C and HIV.** The Kernel says to treat them in the first week.
- **A lapse.** The Kernel treats it as information, not judgment (Protocol 21). It is also the highest-risk event in the series: call your MAT prescriber, keep naloxone, do not use alone, and if you have used, ask someone to stay with you.

How to read the evidence behind the outcomes

The Main Book marks claims with an Evidence Tier: Established, Probable, Emerging, Author/System Experience, and Controversial or Mixed. This guide's reading: the mortality benefit of buprenorphine and methadone, the danger of lost tolerance, the value of naloxone, and the xylazine caveat are well established. The Kernel's "50 to 70 percent" is its own figure, and the strongest published estimates are on the order of half, so treat the range as approximate. The Kernel's overdose and pill statistics are from 2022 and earlier DEA reports, and national figures have changed since, so check current CDC and DEA data. The supplement stack, the peptide layer, the percentage analogs, and the years 3 to 10 trajectory sit lower on that scale, so bring them to your clinician as questions, not as facts.

Take these to your prescriber

- An honest account of your use: what you take, how, how often, any pills, and any alcohol, benzodiazepines, or stimulants, so induction can be timed and withdrawal risks judged.
- Every medication and supplement you take, especially HIV drugs, antifungals, antibiotics, and anything that affects CYP3A4, plus your OPRM1, CYP3A4, and CYP2D6 results.

- A written MAT plan: which medication, how induction will avoid precipitated withdrawal, duration goals, readiness markers for any taper, and how supply is guaranteed, including after any jail, hospital, or program stay.
- Requests for hepatitis C, HIV, and hepatitis B testing, a wound and heart assessment if you inject, a non-opioid pain plan, and naloxone and fentanyl test strips for you and everyone in your home.